

REMARKS

In the Office Action dated April 14, 2006, claims 1-6, 8 and 11 were rejected under 35 U.S.C. §102(b) as being anticipated by Ausschnitt et al. Claims 7 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ausschnitt et al. Claim 10 was rejected under 35 U.S.C. §103(a) as being unpatentable over Ausschnitt et al. and Hunter et al. Claims 12-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ausschnitt et al. and Yanof et al.

Applicants note with appreciation the interview courteously afforded the undersigned counsel for the Applicants on July 11, 2006, wherein the above rejections were discussed.

As discussed at the interview, the Hunter et al. reference, on which the Examiner relied in combination with Ausschnitt et al. as the basis for rejecting claim 10, does not disclose a magnetic resonance imaging system, but instead discloses a technique for generating a translation matrix for the purpose of registering an optical navigation system patient space (domain) to the electromagnetic navigation system patient space, as summarized at column 7, lines 25-35. The electromagnetic and optical information that is obtained and used in the Hunter et al. reference is not the same as magnetic resonance imaging information. As explained at the interview, magnetic resonance imaging makes use of an extremely powerful static magnetic field to align nuclear spins in the body of an examination subject, and those aligned nuclear spins are then "tipped" out of alignment by radiating a radio-frequency pulse into the examination subject. The signals emitted by the nuclei as precess will be returning to alignment are detected and are used to generate the nuclear magnetic resonance image.

Therefore, not only are the optical and electromagnetic representations of navigation aids that are acquired in the Hunter et al. reference not the same as the signals that are acquired in a magnetic resonance imaging system, but also nothing in the Hunter et al. system could be used in the context of a magnetic resonance apparatus, because of the extremely high magnetic fields that are present in a magnetic resonance imaging apparatus. These magnetic fields, which can be in the range between 1.5 Tesla and 3.0 Tesla (or more) preclude the presence of metallic objects as are used in the Hunter et al. system in the proximity of those extremely strong magnetic fields.

It was therefore agreed at the interview that if the subject matter of claim 10 were embodied in independent claim 1, this would preclude continued reliance by the Examiner on a combination of Ausschnitt et al. (directed to a semiconductor circuit manufacturing technique) and the Hunter et al. reference.

Upon further consideration following the interview, Applicants believe that the same or similar arguments with regard to the specific imaging modality of magnetic resonance imaging apply to the other types of medical imaging described at page 7 of the present specification, and therefore it would be unnecessarily restrictive to limit the subject matter of claim 1 only to magnetic resonance imaging. The present RCE therefore has been filed to amend claim 1 to refer to the image of the subject as a medical image that is obtained with a medical imaging modality, and to state that the single image containing the three markings is also obtained with the same medical imaging modality.

Applicants submit that claim 1 amended in this manner is patentable over the teachings of the Hunter et al. reference because, as noted above, it is completely

irrelevant to the purpose of the Hunter et al. reference as to whether distortions exist in the optical image that is displayed. In the Hunter et al. reference, as stated in the aforementioned passage at column 7, lines 25-35, there is already a known relation between the electromagnetic and optical elements, and it is this known relationship that allows the computer to generate and use a translation matrix. All of the relationships in the Hunter et al. reference, therefore, are purely mathematical, and correcting for distortions, if they exist, in the optical image would not be of any assistance whatsoever in registering the two navigation systems with each other. Moreover, even if the optical markings were to appear distorted in the optical image, this is of no consequence because those optical markings are not used by the surgeon for any purpose. They serve solely to register the two navigation systems with each other, and are irrelevant to the surgeon viewing the optical image.

Claim 1 and the claims depending therefrom, therefore, are submitted to be in condition for allowance. As an additional argument in support of patentability, claim 10 has been retained in the application, and is submitted to be in condition for allowance for the reasons discussed at the interview.

The claims directed to the calibration object have been cancelled.

All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

Submitted by,

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